

# Delta

**Hydraulic Dock Leveler**

## **USER MANUAL**



**DELTA EQUIPMENT CO.,LTD**

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Only install or operate after reading manual in detail.

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# 1. INTRODUCTION

Please read this manual carefully before starting, operating, repairing or maintaining the Dock Levelers. The manual describes the installation, functioning, repair and maintenance of your Dock Levelers, as well as its use and the safety measures and precautions to be taken. Contact EP if you require more information.

The operator and maintenance staff should read this manual and follow training before working with this machine.

Keep this manual throughout the service life of the Dock Levelers. The operator and all persons who come into contact with the Dock Levelers should read it regularly and have access to it at all times.

Failure to comply with the safety instructions and warnings in this manual could result in serious injury to the operator or other persons in the vicinity of the machine.

Dangers to people are indicated as follows:



**warning**

Points for consideration for the proper operation and long service life of your Dock Leveler are indicated as follows:



**note**

People with responsibility for the safe and proper operation of this Dock Levelers must use the procedures, working practices that are described in this manual.

## 2. SAFETY WARNINGS

While working with the Dock Leveler, the person who is responsible for supervising the operation environment should take the necessary organizational measures to guarantee the employees' health and safety as required by local legislation.

This includes:

### ***2.1 Appointment of authorised personnel***

Authorised personnel are staff who are permitted to operate a Dock Leveler according to local statutory requirements and are appointed within the company to do this.

### ***2.2 Definition of danger zone***

The danger zone is the area within which people may be at risk from the movements of the Dock Levelers. Only the operator of the Dock Levelers may be in the danger zone.

### ***2.3 Prevention of injury***

Operating procedures and instructions should be introduced, that as far as reasonably practicable prevent the risk of injury to persons in the working area of the Dock Leveler. These include:

- never make adjustments to the machine if you are not trained and authorized to do so; avoid making adjustments to the machine when the machine is moving; never allow people near the Dock Leveler when you are carrying out work;
- provide additional illumination if the visibility in the working area is restricted;

Consult your prevention adviser if desired.

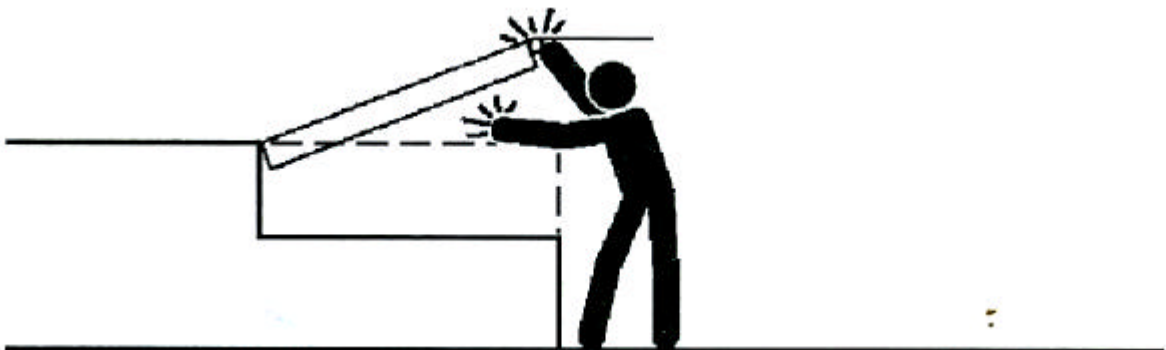
## 2.4 Operational Safety Precautions



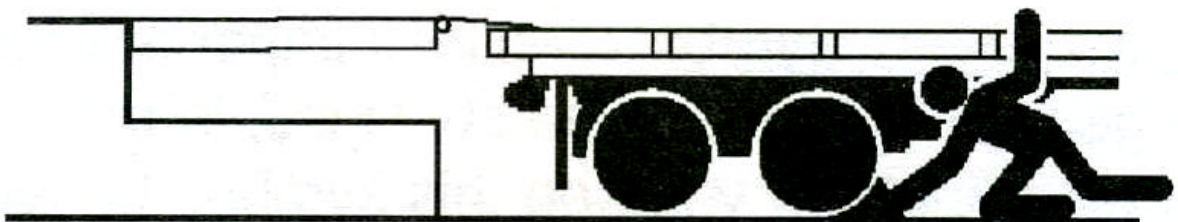
2.4.1 Stay clear of dock leveller when freight carrier is entering or leaving area.



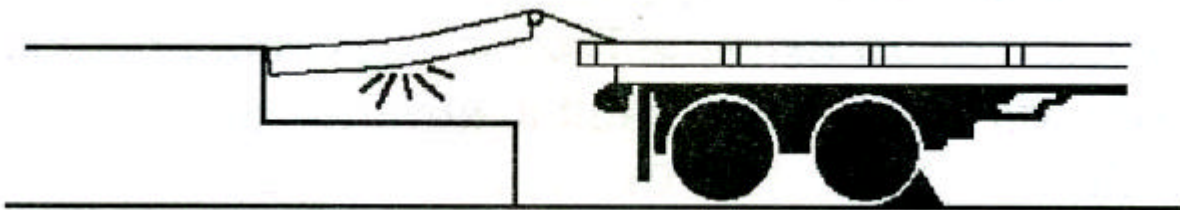
2.4.2 Do not move or use the dock leveller if anyone is under or in front of it.



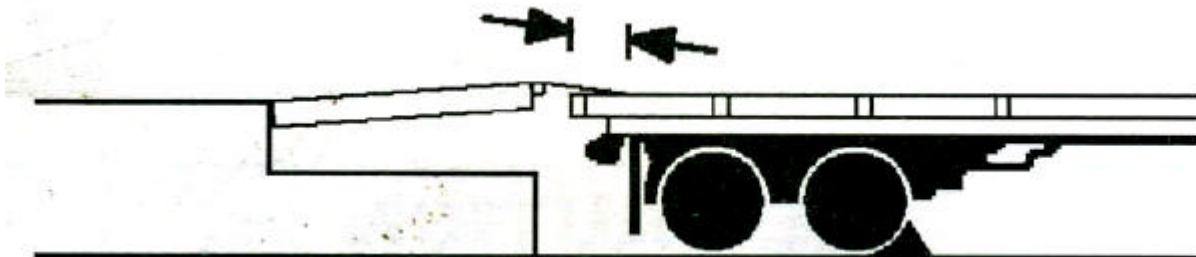
2.4.3 Keep hands and feet clear of pinch points. Avoid putting any part of your body near moving parts.



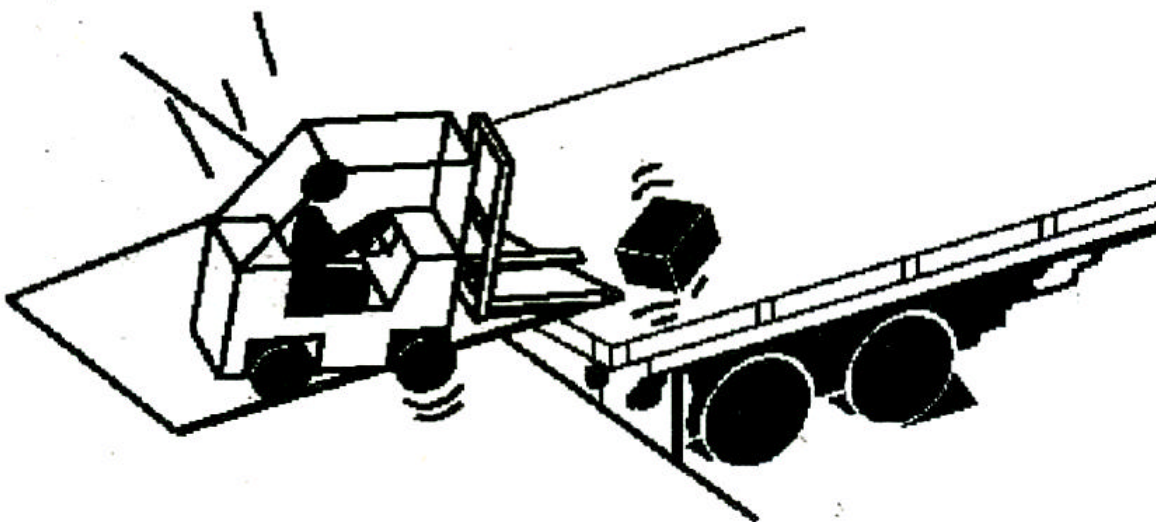
2.4.4 Chock/restrain all freight carriers. Never remove the wheel chocks until loading or unloading is finished and truck driver has been given permission to drive away.



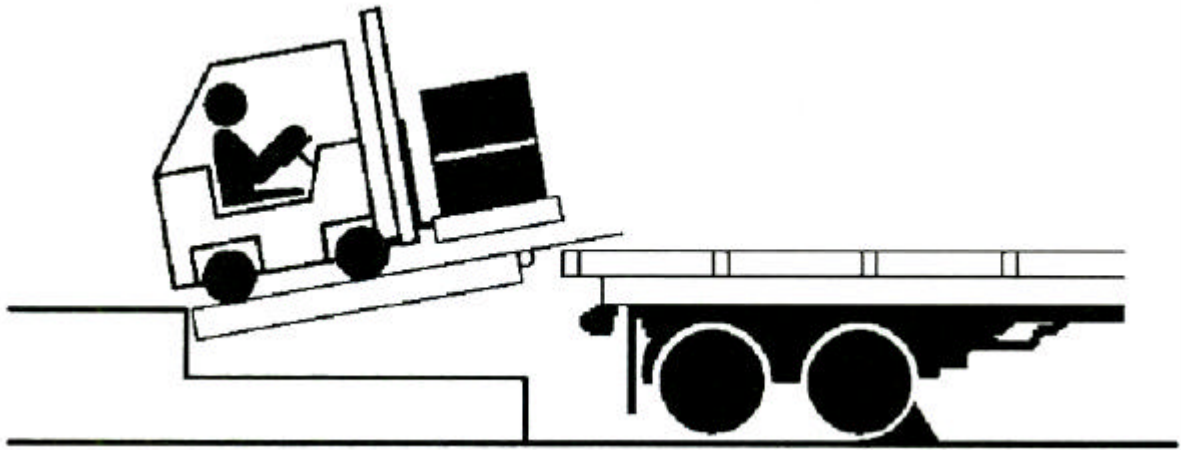
2.4.5 Do not use a broken or damaged dock leveller. Make sure proper service and maintenance procedures have been performed before using.



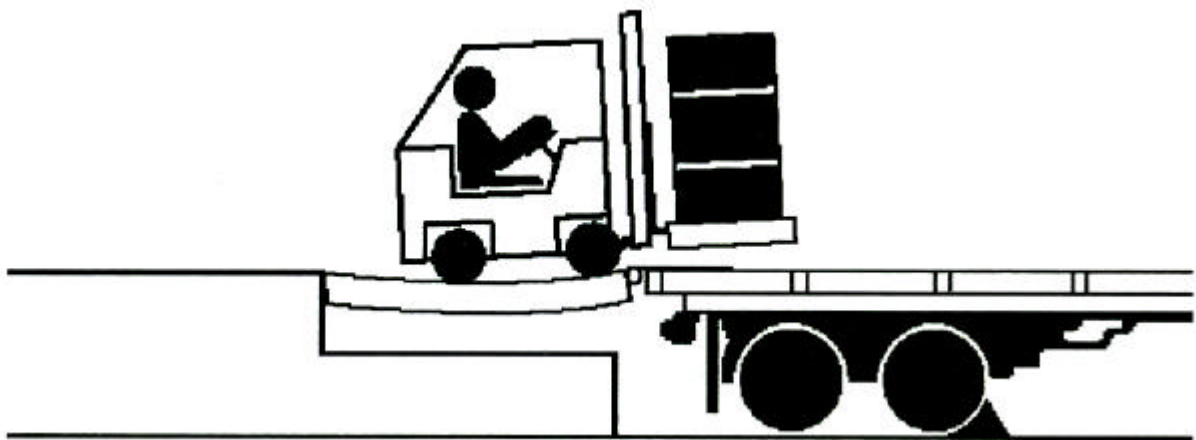
2.4.6 Make sure lip overlaps onto trailer at least 4 in. (100mm)



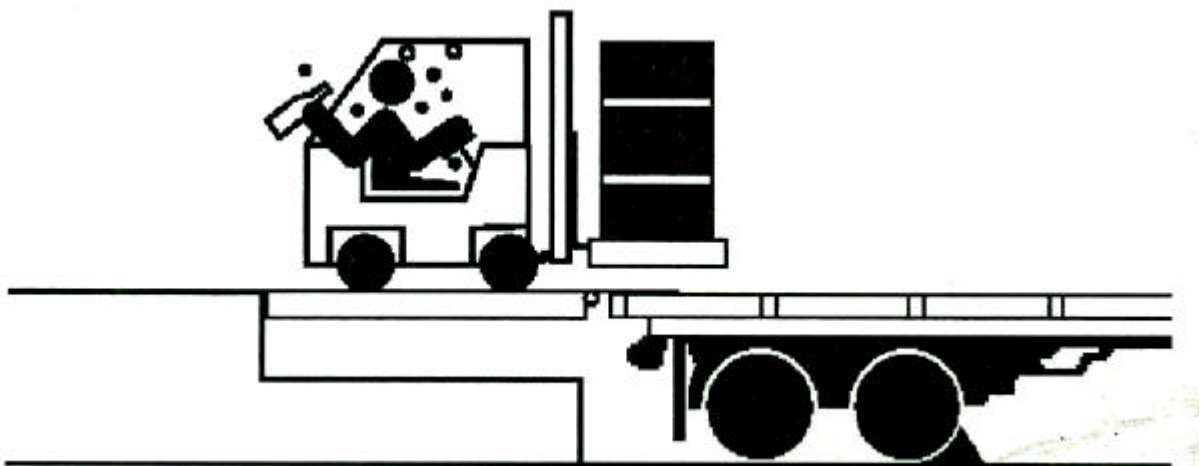
2.4.7 Keep a safe distance from both side edges.



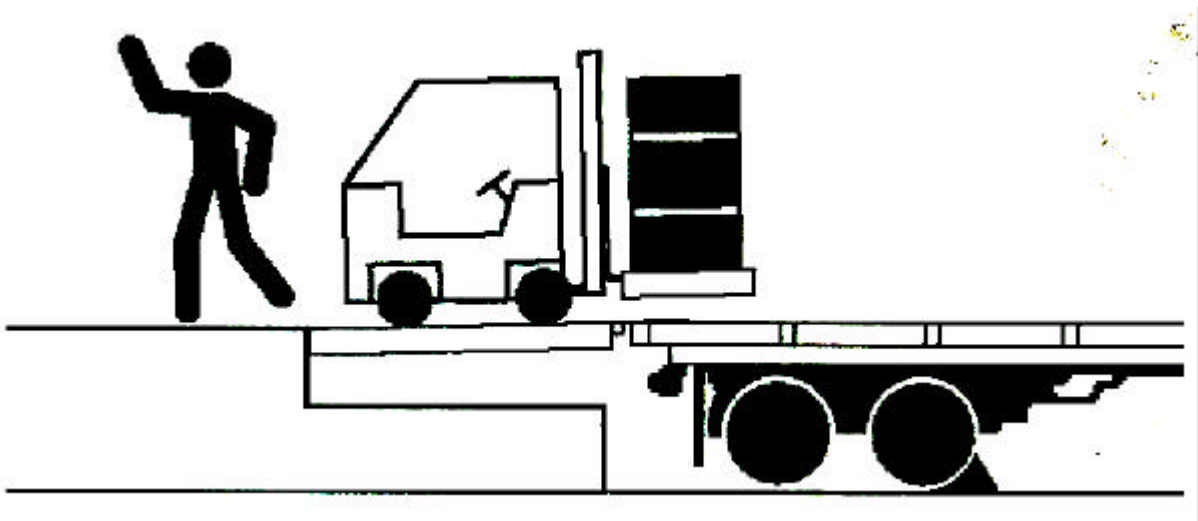
2.4.8 Do not use dock leveller if freight carrier is too high or too low.



2.4.9 Do not overload the dock leveller.



2.4.10 Do not operate any equipment while under the influence of alcohol or drugs.



2.4.11 Do not leave equipment or material unattended on dock leveller.

## 2.5 Safety symbols

All warning symbols and labels should remain legible at all times. Please note the following:

- To clean label use only a damp cloth and a mild soap solution; do not use solvents, petrol, strong detergents etc.;
- Replace damaged and/or illegible labels; contact EP for new labels;
- Replacement parts must be provided with labels identical to those on original parts.

### *Meaning of the symbols*



Read the manual before starting, operating, repairing or maintaining the Dock Levelers



Risk of electric shock

## 3. GENERAL DESCRIPTION OF THE MACHINE

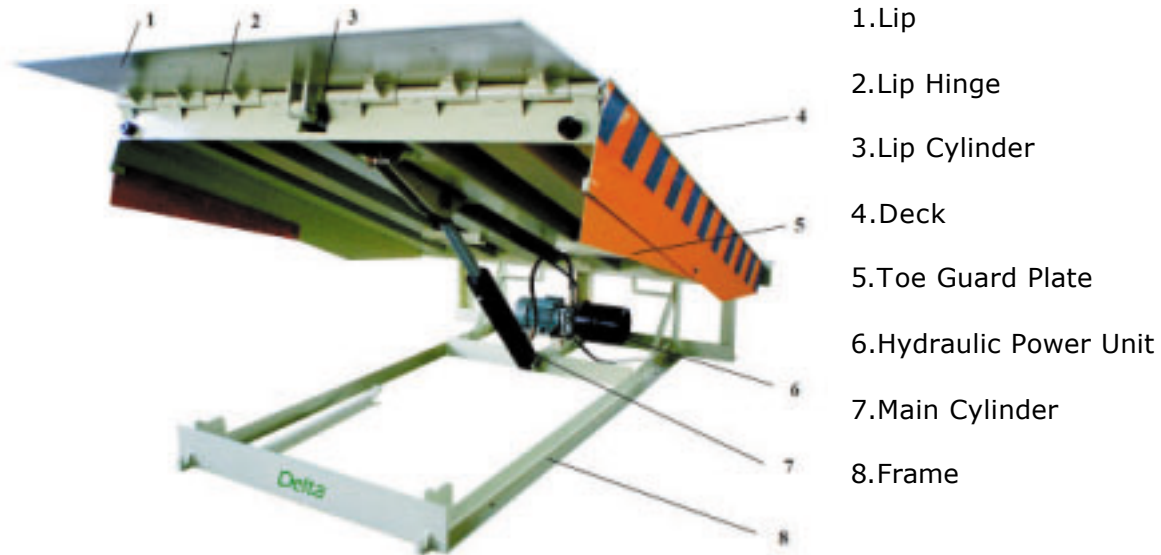
The Dock Leveler is the special equipment for the cargo loading and unloading, let the operation of the material handling equipments are not influenced by the different height of trailer bed with the platform, such as the forklift, it may drive into the trailer compartment to carry on the handling operation directly, it only requires a single person to complete the process of loading and unloading cargo fast and safely. It can help reduce a lot of the labor cost, improve working efficiency by many times, obtain the better economic efficiency, it is indispensable to the modern warehouse necessary.

EP Hydraulic Dock Levelers offer high performance, minimal maintenance and increased safety for today's high volume loading dock area. Easy to operate hydraulic system incorporates pushbutton control for both deck and lip operation, powered by a self contained, 0.75kw/1.25hp maintenance free power pack.

### 3.1 Components

The Hydraulic Dock Leveler (See Figures 1) is composed of the deck [4], the frame [8], the Lip [1] and the hydraulic system [3,6 & 7], the electrical control box,etc.

The hydraulic power unit consists of the oil pump, the electric motor, the oil tank, the relief valve and the reversing valve.



**FIG. 1**

### 3.2 Technical features

EP Hydraulic dock levellers are available in the following sizes, capacities and options.

#### **Width**

6ft (1830mm) / 1800mm

7ft (2110mm) / 2000mm

#### **Length**

6ft (1830mm) / 2000mm

8ft (2210mm) / 2500mm

10ft(2820mm) / 3000mm

#### **Capacity**

25000lbs (12000kg)

30000lbs (14000kg)

35000lbs (16000kg)

Special needs available.



The technical features of Hydraulic Dock Levelers listed below. Its main features can be found on the type plate located the front bottom of the Dock Levelers.

1. Model	DE -12HE-1820 DE -14HE-1820 DE -16HE-1820	DE -25HA-6.8 DE -30HA-6.8 DE -35HA-6.8	DE -12HA-2025 DE -14HA-2025 DE -16HA-2025	DE -25HA-7.8 DE -30HA-7.8 DE -35HA-7.8
2. Capacity	12000KG 14000KG 16000KG	25000LB 30000LB 35000LB	12000KG 14000KG 16000KG	25000LB 30000LB 35000LB
3. Platform Size	1800x2000mm		2000x2500mm	
4. Overall Size		72"x87"(6' x 8')		83"x87"(7' x 8')
5. Height*	600mm	19"(24")	600mm	19"(24")
6. Lip Board Width	450mm	18"	450mm	18"
7. Travel (up)	300mm	12"	300mm	12"
8. Travel (down)	300mm	12"	300mm	12"
9. Motor	0.75kw	1.25hp	0.75kw	1.25hp
10. Oil tank capacity	5L			
11. Input voltage	Available in all standard single and three phase voltage			
12. Protection degree (IPXXX)	IP 23			
13. System pressure	16 MPa			

\*The height means the height in lowered position.

### 3.3 Hydraulic system

The Hydraulic Dock Leveler contains the required hydraulic oil and hydraulic settings have been installed at the factory.



**note:** Do not alter the settings of the hydraulic system; do not adjust the hydraulic pressure.

#### HYDRAULIC SYSTEM DIAGRAM:

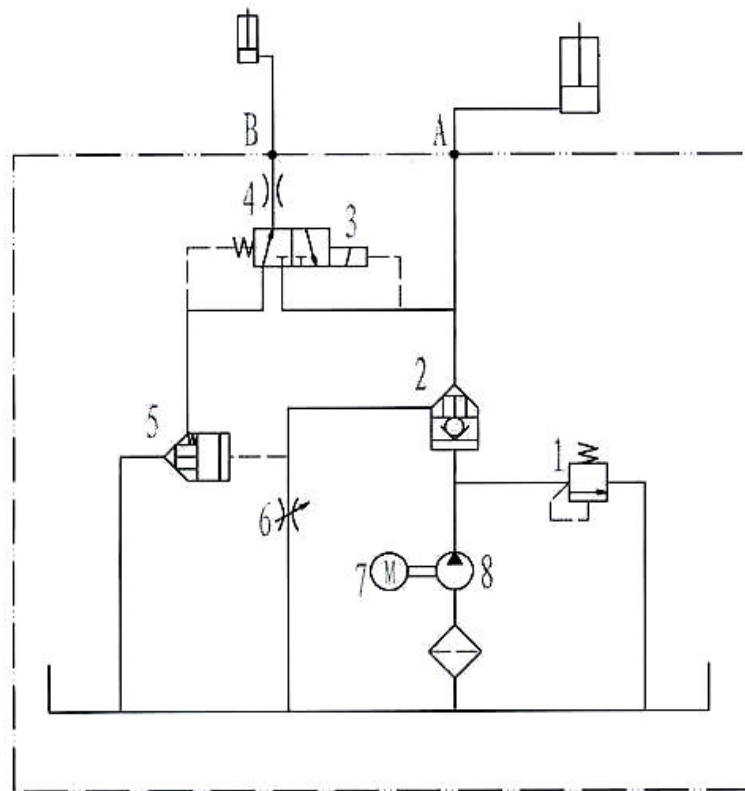


FIG. 2

- |                                  |                              |
|----------------------------------|------------------------------|
| 1. Adjustable relief valve       | 5. Control valve             |
| 2. Unidirectional inserted valve | 6. Adjustable throttle valve |
| 3. Reversing valve               | 7. Electric motor            |
| 4. Throttle valve                | 9. Oil pump                  |

### 3.4 Electrical system( hydraulic dock levelers)

#### 3.4.1 Connection



#### warnings

- Only a certified electrician may carry out the electrical installation of the Hydraulic Dock Levelers.
- Ensure good grounding of the switch box.

All wiring is in place. Attach a plug to the feeder cable; the Hydraulic Dock Leveler is not fit to be directly connected to the mains.



**note:** The components in the switch board, such as contactors and power supply function at this voltage rate only, and the AC engine was construed to function in the voltage which you can find on the type plate.

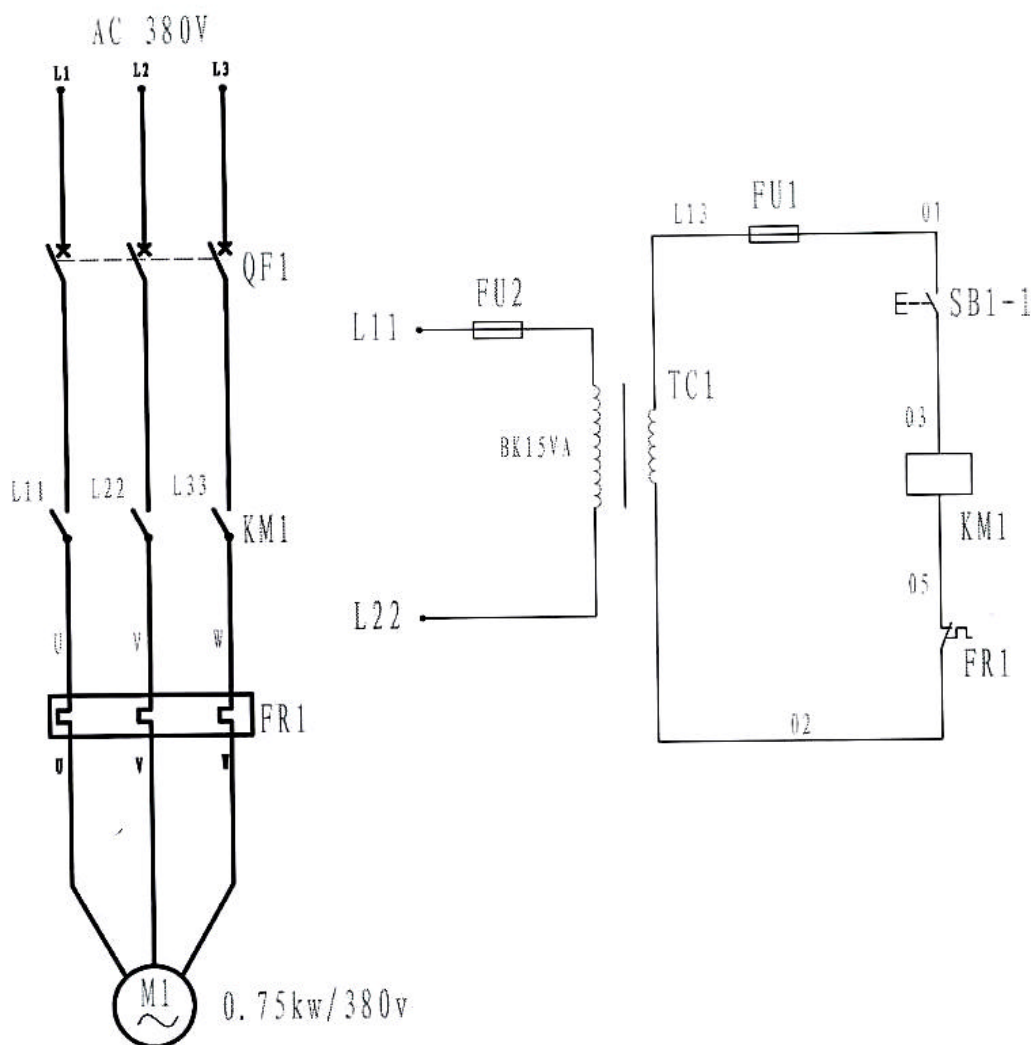
### 3.4.2 Testing

Switch the power ON briefly in order to verify whether the engine rotates in the direction marked by the arrow. In order to reverse the engine, switch two phases.

When the ON button in the control box is inserted, the START button can be activated.

1. Switch power ON by pressing the ON button.
2. Press the START button constantly to activate the Main cylinder, and the deck rise slowly until reach the top height. If you press the START button all the time, the Lip cylinder will be activated after the deck reach the top. Then the lip will extend.
3. Free the START button, the deck will fall down and the lip keep silent. If you Press the START button again, the lip will retract slowly. Free the START button again when the lip retract completely and the deck will fall down and back to the original position.
4. Press the OFF button: the power should be cut off immediately.
5. Unplug the Hydraulic Dock Levelers.

**ELECTRIC SYSTEM DIAGRAM**



**FIG. 3**

M3-3-phase asynchronous motor  
QF-Breaker  
SB-Button  
FR-Hot relay

KM-Contactor  
TC-Transformer  
FU-Fuse

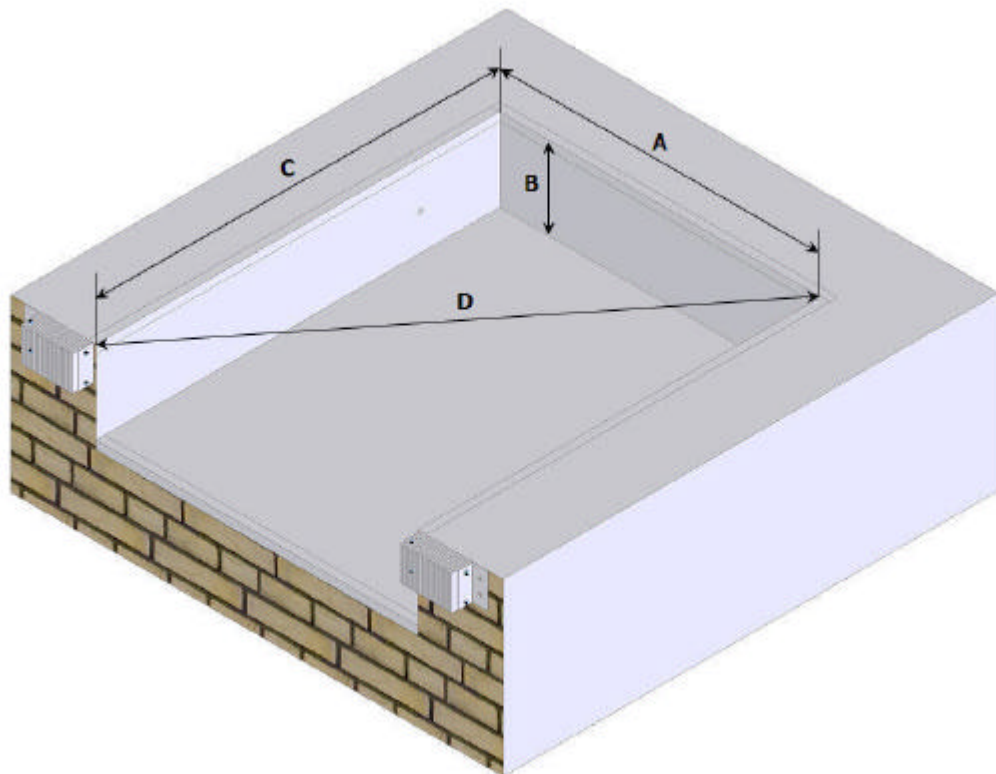
## 4. INSTALLATION

### 4.1 Prepare pit

#### Dimensions for Pit

Leveler Size	Dim "A" width	Dim "C" length	Dim "B" depth (rear)	Dim "B" depth (front)
6' x 6'	74'	63'	19 1/2'	20'
7' x 6'	85'	63'	19 1/2'	20'
6' x 8'	74'	87'	19 1/2'	20'
7' x 8'	85'	87'	19 1/2'	20'
6' x 10'	74'	111'	19 1/2'	20'
7' x 10'	85'	111'	19 1/2'	20'

Leveler Size (width x length)	Dim "A" width	Dim "C" length	Dim "B" depth (rear)	Dim "B" depth (front)
1800mm x 2000mm	1860mm	2150mm	600mm	605mm
2000mm x 2000mm	2060mm	2150mm	600mm	605mm
2000mm x 2500mm	2060mm	2650mm	600mm	605mm
2000mm x 3000mm	2060mm	3150mm	600mm	605mm



**A-DISTANCE(PIT WIDTH) (FRONT AND REAR)**

**B-DISTANCE(DECK FLOOR- TO PIT FLOOR) (ALL FOUR CORNERS)**

**C-DISTANCE(PIT LENGTH) (BOTH SIDES OF PIT)**

**D-DISTANCE(PIT CORNER- TO-CORNER) (TOP, BOTTOM, AND BOTH SIDES)**

FIG. 4

**Warning**

Post safety warning and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveller before installation has been completed.

**Warning**

Only trained installation professionals with the proper equipment should install this product.

**Warning**

Do not remove the shipping bolts fixed on the dock leveller lip until instructed to do so.

Before lowering the dock leveller into the pit, the following must be performed,

1. Remove all debris from the pit and sweep the pit clean
2. Check the entire dock leveller pit for proper construction according to approved / certified pit drawing. Make sure pit is square by making the following measurements,
  - Measure pit width distance A at both front and rear of pit.
  - Measure dock floor-to-pit floor distance B at all four corners
  - Measure pit length distance C at both sides
  - Measure corner-to-corner(cross-cross) distance D at both sides. Take measurements at dock floor level and at pit floor level.

## ***4.2 Installation***

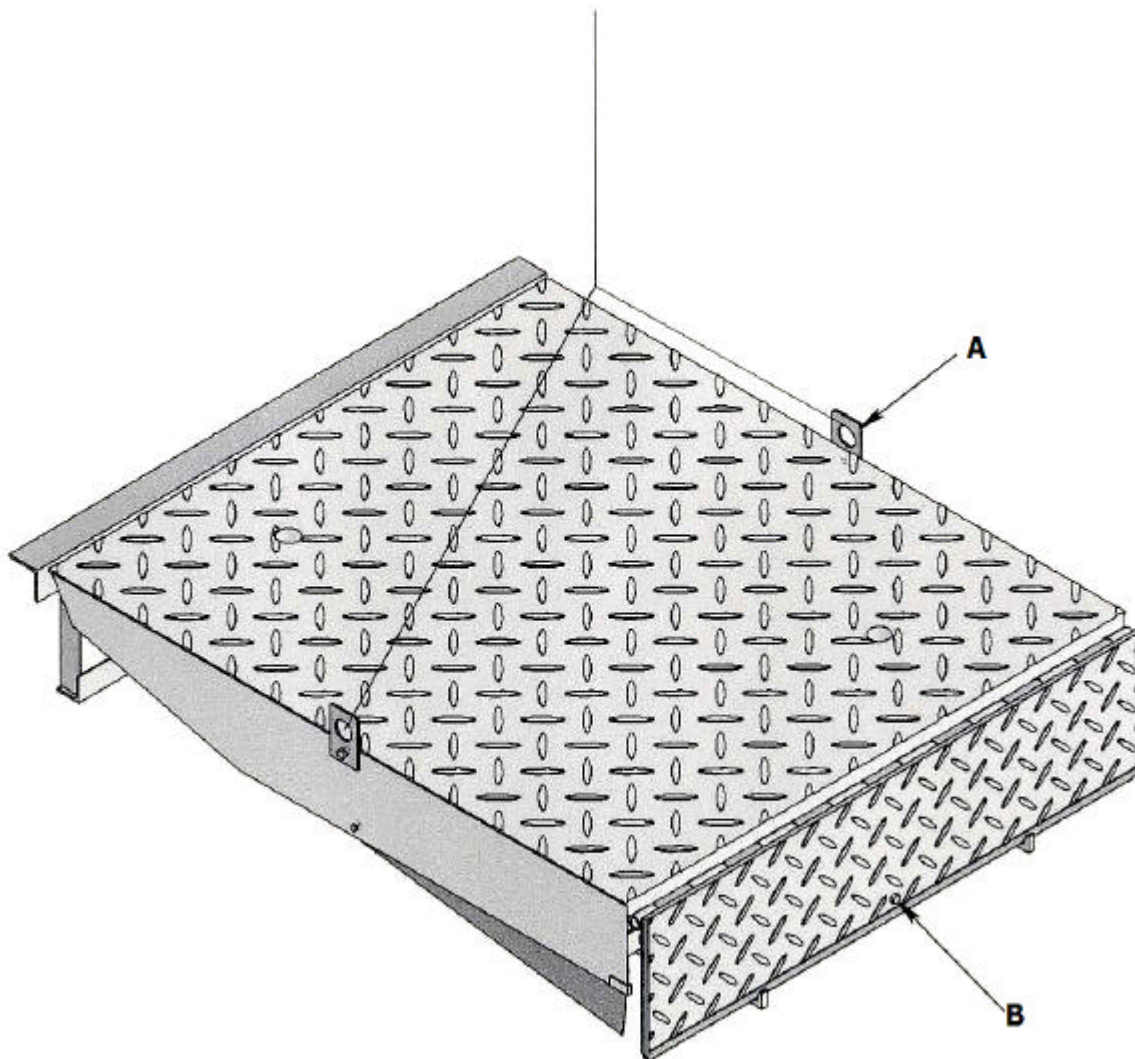
EP dock levellers are designed with installation in mind. Each unit is shipped with lifting bracket A fastened to the platform side joists.

Using a lifting device and chains with the appropriate lifting capacity and reach, Always use the lifting brackets whenever lowering or lifting a dock leveller into or out of a pit.

Before lifting, remove any bumpers that may be banded or bolted to the frame of the dock leveller.

**Warning**

Do not remove the shipping bolts B fixed on the Dock Leveller lip and frame this time. The shipping bolts are needed to hold the leveller together during the installation process.



**A-LIFTING BRACKET    B-SHIPPING BOLT**

**FIG. 5**

When the machine is placed in a pit floor and firmly anchored to it with 4 expansion bolts. Use the data in the table below as a guide:

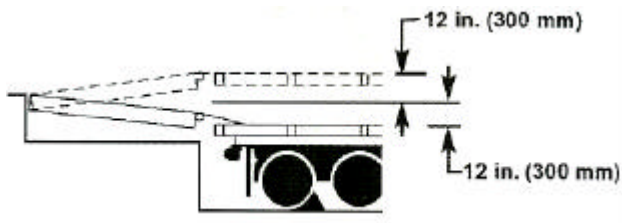
<b>Bolt</b>		<b>Expanding tube</b>		<b>Hole</b>	
<i>Spec.</i>	<i>Length</i>	<i>Outer diameter</i>	<i>Length</i>	<i>Diameter</i>	<i>Depth</i>
M16	150 mm	22 mm	90 mm	23 mm	100 mm

## 5 OPERATING INSTRUCTIONS



### **warning**

- Stay clear of dock leveller when freight carrier is entering or leaving dock area.
- Do not raise or lower the dock leveller if anyone is under or in front of leveller.
- Keep hand and feet clear of pinch pints. Avoid putting any parts of your body near moving parts.
- Do not active the dock leveller until the truck/trailer is positioned squarely against the bumper and the truck wheels are chocked.
- Do not use the dock leveller if the freight carrier is too high or too low.(as **FIG. 6**)
- Never remove the wheel chocks until loading an unloading is finished and truck driver has been given the permission to leave.



**FIG. 6**

The work range of EP dock leveller is  $\pm 12$  inch (300mm).

## 5.1 Controls Buttons on Hydraulic Dock Levelers

ON:

- Press down to switch the power ON

OFF:

- Press down to switch the power OFF

START:

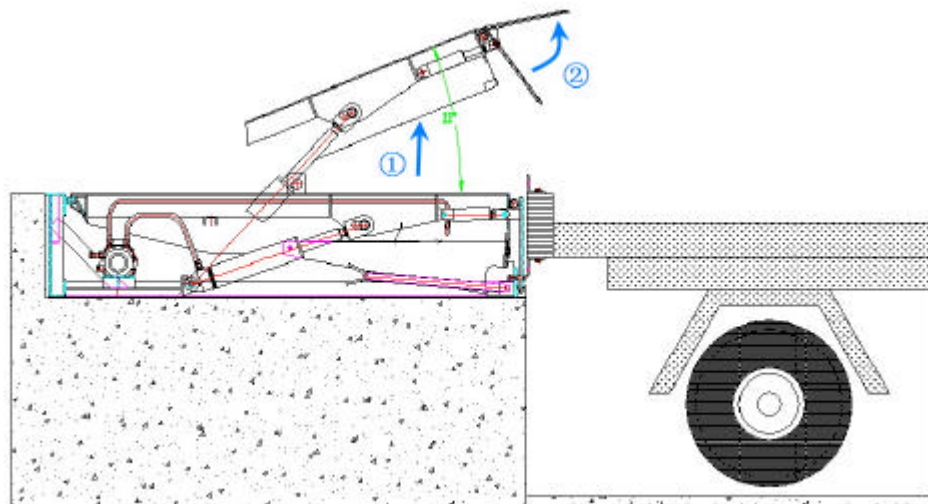
- Hold the button down to raise the deck
- Free the button to lower the deck



**FIG. 7**

## 5.2 Operating the Dock Levelers

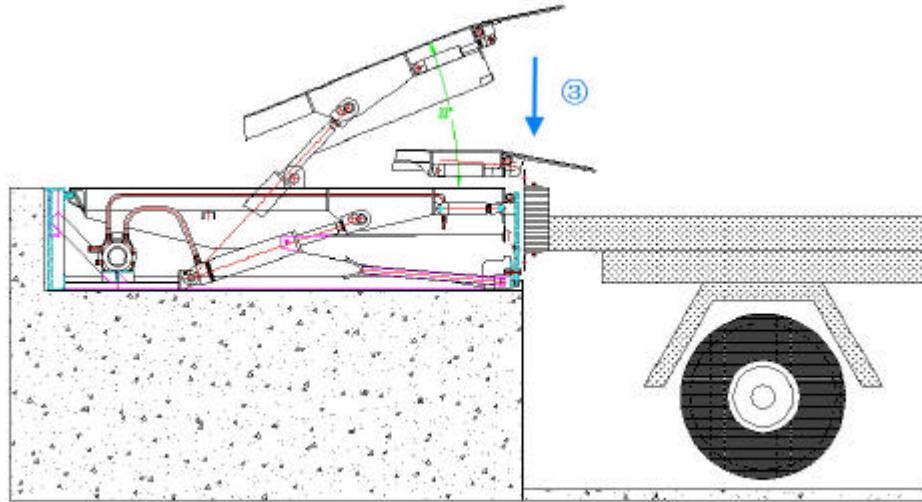
- ①. Switch power ON by pressing the ON button. Press the START button constantly to activate the Main cylinder, and the deck rise slowly until reach the top height.
- ②. Then the Lip cylinder will be activated and the Lip kick out.



**FIG. 8**

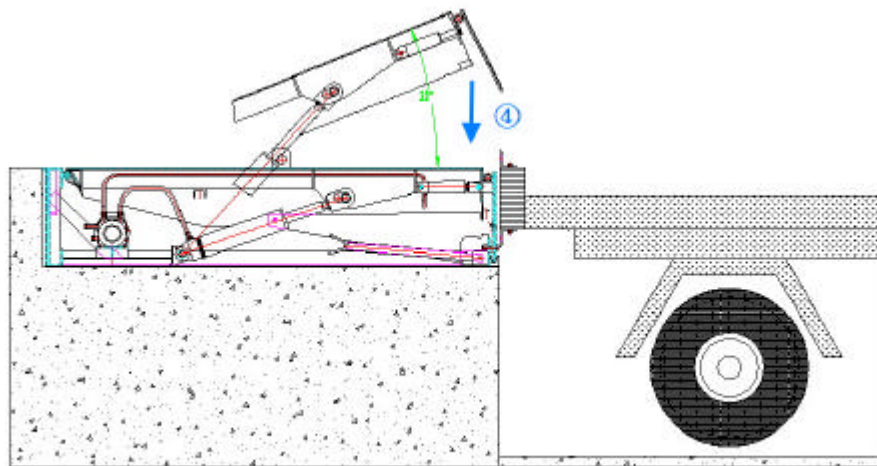
- ③. Free the START button, the deck will fall down and the lip keeps silent and reach the trailer bed. Now, the operator can take the loading and unloading operation.





**FIG. 9**

- ④. After finishing the loading and unloading operation. Pressing the START button and the deck rise to top again, then free the START button. Pressing the START button again while deck falling down, the lip will retract slowly. Free the START button again when the lip retracts completely and the deck will be back to the original position.



**FIG. 10**

- ⑤. Press the OFF button and unplug the Hydraulic Dock Levelers.

## 6. TRANSPORT

- ☐ With forklift truck: drive the forks of the forklift truck into the fork slots at the rear of the Dock Levelers
- ☐ With crane: lift the dock leveler by lifting bracket

As shown on the **FIG. 11**





**FIG. 11**



**note**

When use forklift truck to transport the Dock Leveler, please notice the fork slots is at rear position, DO NOT drive fork from the sides of Dock Leveler.

## 7. STORAGE

Cover components that are sensitive to moisture. Apply an anti-corrosive agent to parts that rust easily.

## 8.MAINTENANCE INSTRUCTIONS

### ***8.1 Important advice***

In order to keep your Dock Levelers in a safe and optimum condition for as long as possible, it is important to make sure repair reports are carefully updated. Always keep a daily maintenance book with the Dock Leveler (see Annex I). This must be updated at the intervals determined by the operator's maintenance procedures, i.e. daily, weekly etc.



**warning**

- Before starting maintenance or repair work: read the safety measures in Chapter 4 and cut the power.
- Your Dock Levelers must only be maintained by trained and authorized personnel.
- Check the Dock Levelers daily before start up. Never use a Dock Leveler with a fault.
- Always post safety warning and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveller before maintenance is complete. Failure to do this may result in serious personal injury or death.
- Always stand clear of the dock leveller lip when working in front of the dock leveller. Failure to do this may result in serious personal injury or death.
- The platform maintenance prop must be in the serve position when working under the dock leveller. (as **FIG.12** )



**Note**

- Repair faults immediately. Only use original spare parts or parts of equivalent quality.
- All spent lubricants and waste products must be disposed of in line with local environmental laws and controls (e.g. waste oil, used batteries, worn parts etc.).
- It may be useful to consult the "Troubleshooting Guidelines" in Annex II.

Contact EP Service & Repair Division if you have any technical questions or if your Dock Leveler has a complex fault.

Identify your Dock Leveler by quoting the EP number on the type plate so that we can help you as quickly as possible.



FIG.12

## 8.2 Maintenance and Inspections

### 8.2.1 Inspection before each use

Check the grounding of the electrical box, make sure that the cable and electrical equipment function, and take the maintenance measure in time;

Ensure the hydraulic pressure station, pipeline, the pipe joint clamps connect well and no oil leak. Solve the problem in time, and keep the working area clean.

### 8.2.2 Periodic inspection

#### 8.2.2.1 Electrical maintenance

If a light does not illuminate or an electrical part does not work, the fuse may have blown. Check the fuses in the electrical equipment box.



#### **note**

- ☐ Use a fuse with the same current rating as the fuse that has blown FU1(1A), FU2(0.3A)
- ☐ If the same fuse keeps blowing, this points to another fault. Contact EP.

#### 8.2.2.2 Hydraulic maintenance

- ☐ Replace the hydraulic oil every 6 months and clean out the oil tank.

## **ANNEX I      DAILY CHECKLIST**

**Report and repair defects before putting the dock levelers into service**

**OPERATOR:**  
**DOCK LEVELERS ID:**  
**DATE:**


<b>Checkpoints</b>	<b>OK</b>	<b>not OK</b>	<b>Remarks</b>
<b>1. Control Panel:</b>			
Button			
Power			
<b>2. Hydraulic System</b>			
oil level in tank			
oil pressure			
oil leaks			
<b>3. Electrical system</b>			

**Operator remarks:**

**DELTA SERVICE & REPAIR DIVISION**

## ANNEX II TROUBLESHOOTING (Hydraulic Dock Levelers)

If your Hydraulic Dock Levelers will not work, the following guidelines could be of use. Never use your Hydraulic Dock Levelers until the fault has been solved. Contact EP if you wish further advice.

FAULT	POSSIBLE CAUSE	SOLUTIONE
Motor can not work	No switch on power or lack phase; The electric appliance contact not well or damaged	Put through the power. Inspect whether the electric appliance all work well.
Deck can not rise and lip can not kick out  <b>Stop working immediately</b>	The motor opposite rotation; The oil suction pipe or the oil suction mesh jam or oil not enough; The oil viscosity is excessively high.	Correct the rotation direction; Clean the jam or add oil; Change the oil.
Deck have not raised to the top height, the lip kick out	The pressure of the reversing valve is low	Adjust the pressure of the reversing valve.
Lip cant retract well	The hinge joint not flexible enough	Add butter at the hinge joint